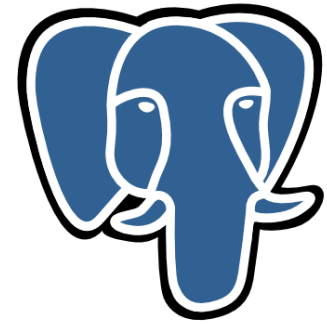


Getting Started with PostgreSQL

Ami Levin, October 2019



PostgreSQL

O'REILLY®

Welcome

4 Hours

4 Sections

4 Breaks

13 Modules

13 Exercises

And one ring to rule them all...





Ami

Goals



UNDERSTAND WHAT IT IS



GETTING HELP



GET YOUR HANDS “DIRTY”

Bonus Goals



LEARN SOME SQL
FUNDAMENTALS



GET CURIOUS AND
MOTIVATED



HAVE FUN!

Non-Goals



ZERO TO HERO



IN DEPTH COVERAGE

Agenda

What is PostgreSQL?

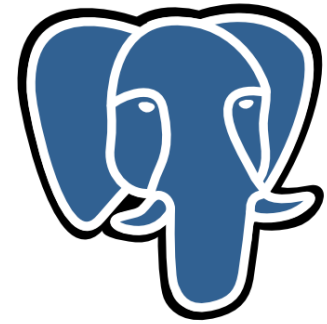
Creating Tables

Managing data

Supporting objects

What is PostgreSQL?

Placing the cornerstones



PostgreSQL

O'REILLY®

Agenda

Architecture

Managing databases

Accessing objects

PostgreSQL



A relational database management system (RDBMS)



Free and open source



Evolved from Ingres at UC Berkeley



Formally released in 1997

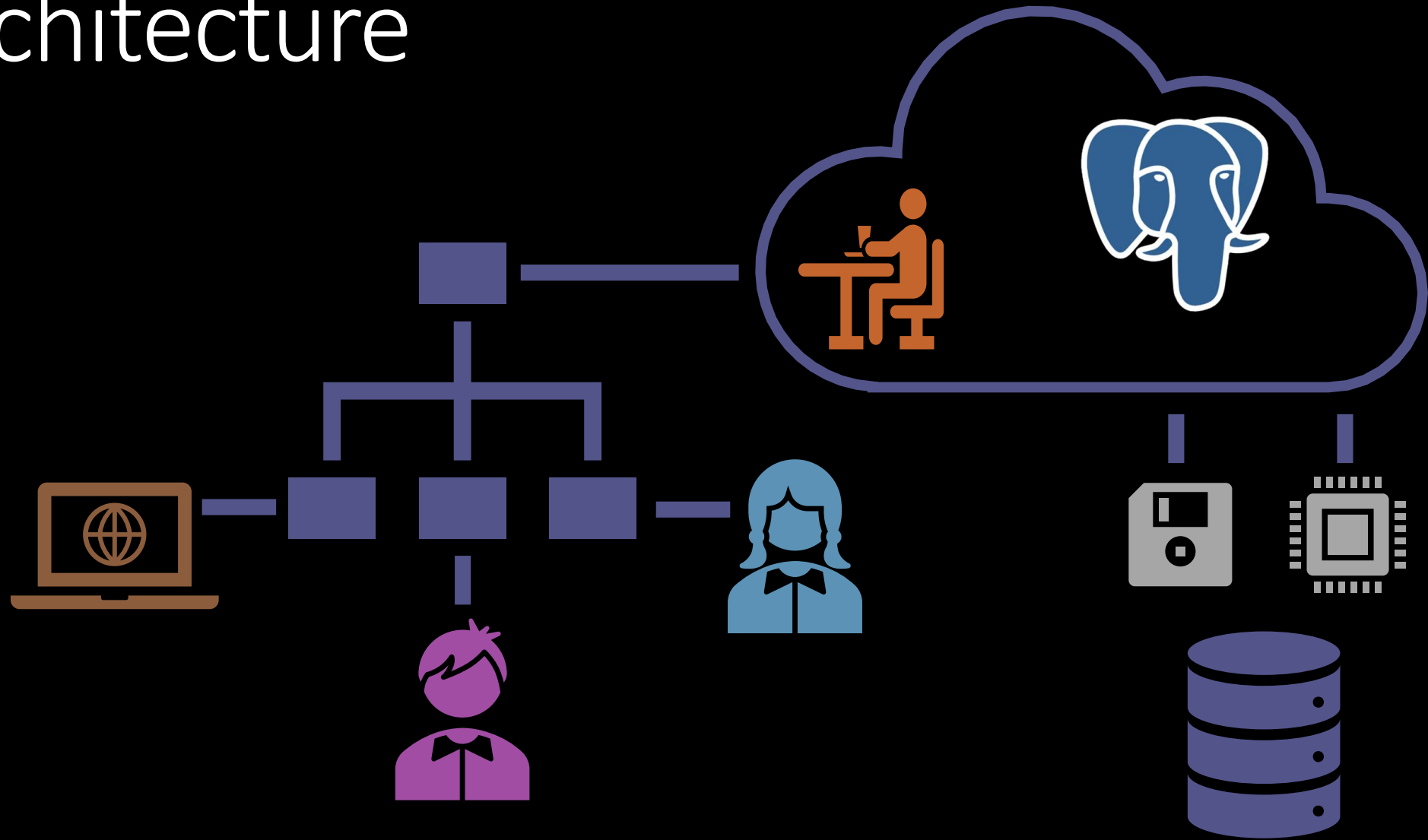


Latest major release version 12 last Week!

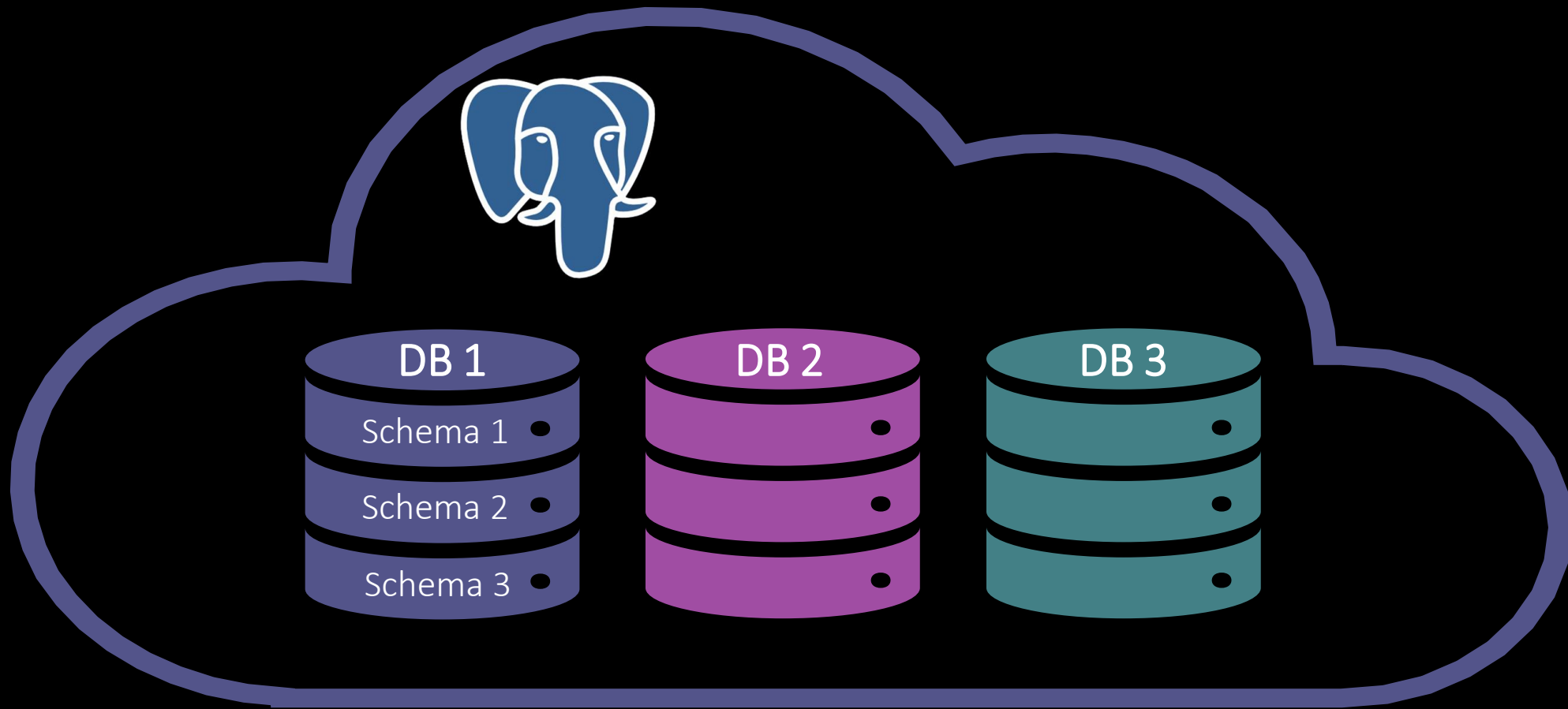


wiki.postgresql.org

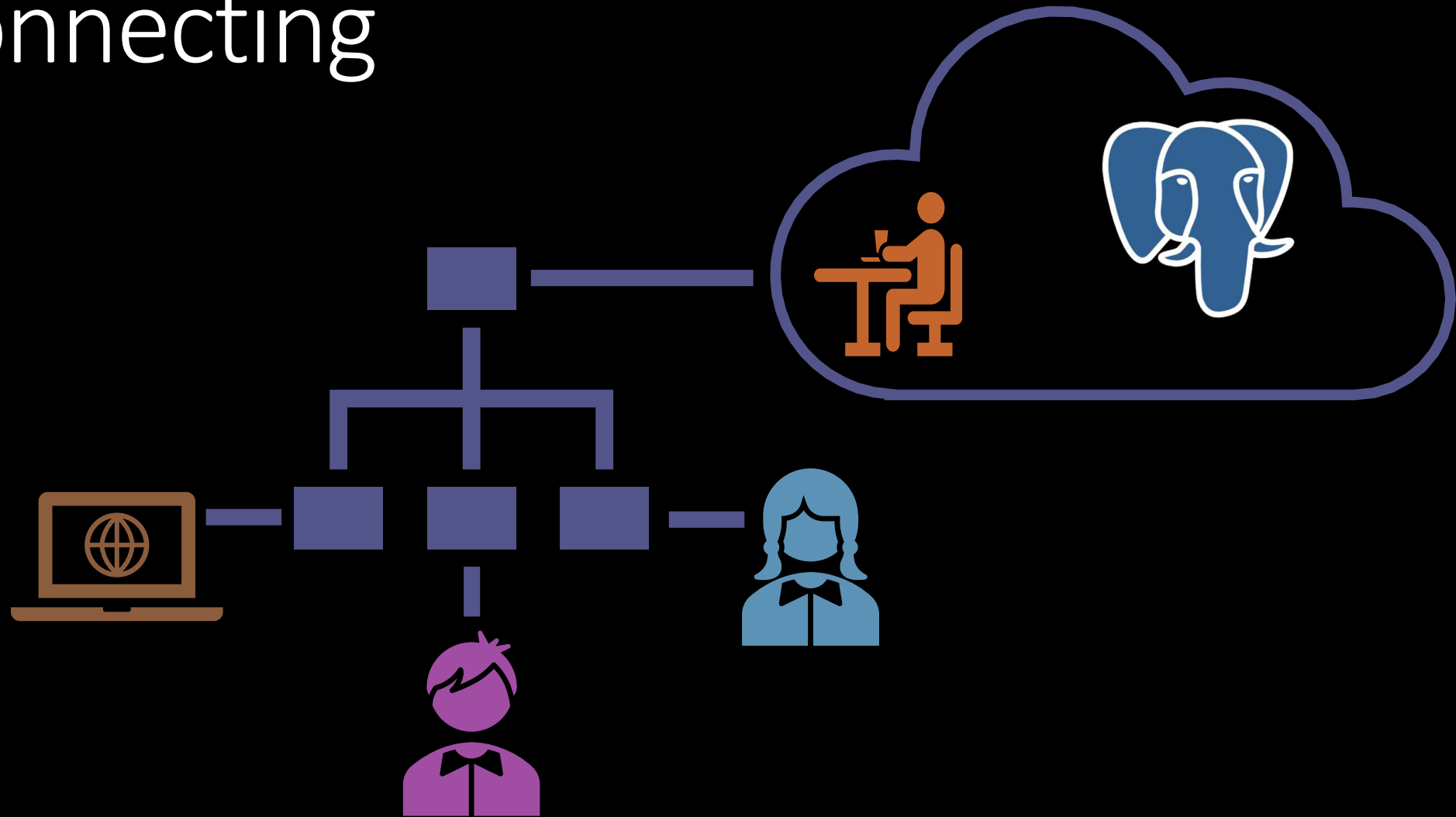
Architecture



Databases



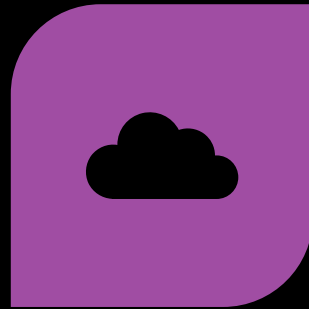
Connecting



Installing vs. Hosting



LOCAL
INSTALLATION



HOSTING IN PUBLIC
CLOUD



PaaS

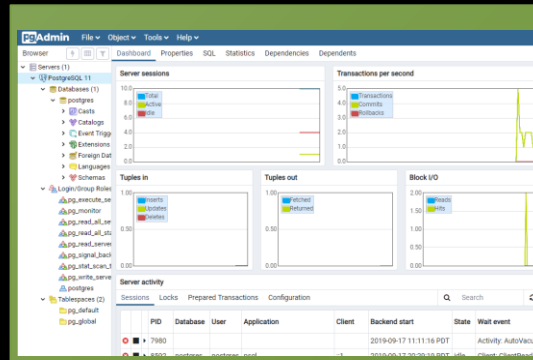


ONLINE QUERY
SERVICES

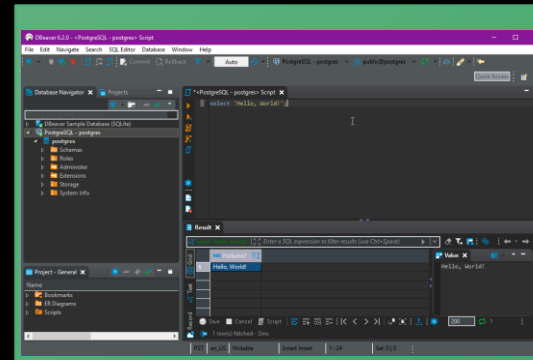
```
SQL Shell (psql)
Server [localhost]:
Database [postgres]:
Port [5432]:
Username [postgres]:
Password for user postgres:
psql (11.5)
WARNING: Console code page (437) differs from Windows code page (1252)
        8-bit characters might not work correctly. See psql reference
        page "Notes for Windows users" for details.
Type "help" for help.

postgres=# \help
You are using psql, the command-line interface to PostgreSQL.
Type:  \copyright for distribution terms
       \h for help with SQL commands
       \? for help with psql commands
       \g or terminate with semicolon to execute query
       \q to quit
postgres=# \?
General
\copyright      show PostgreSQL usage and distribution terms
\crosstabview [COLUMNS] execute query and display results in crosstab
\errverbose     show most recent error message at maximum verbosity
\g [FILE] or ;  execute query (and send results to file or pipe)
```

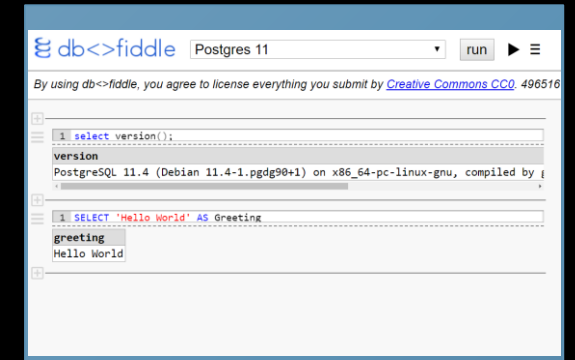
PSQL



PgAdmin



DBeaver

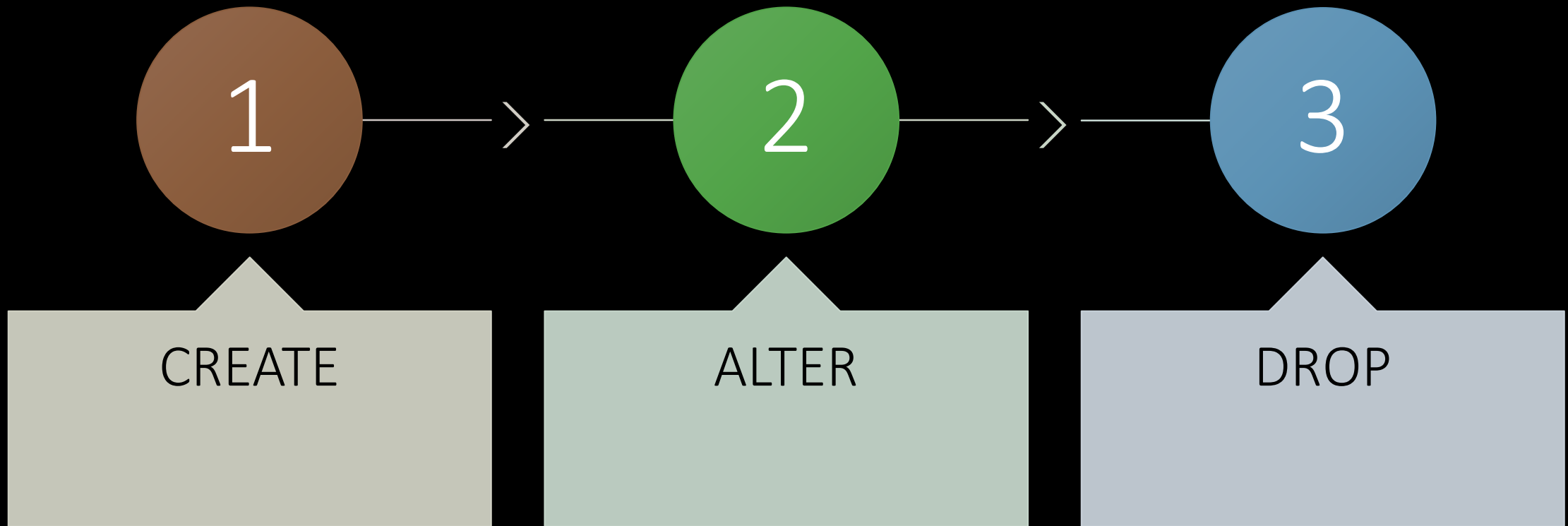


db-fiddle.uk

Tools

Exercise – Module 1-1.sql





Creating Databases

Managing Databases



BACKUP



ANALYZE

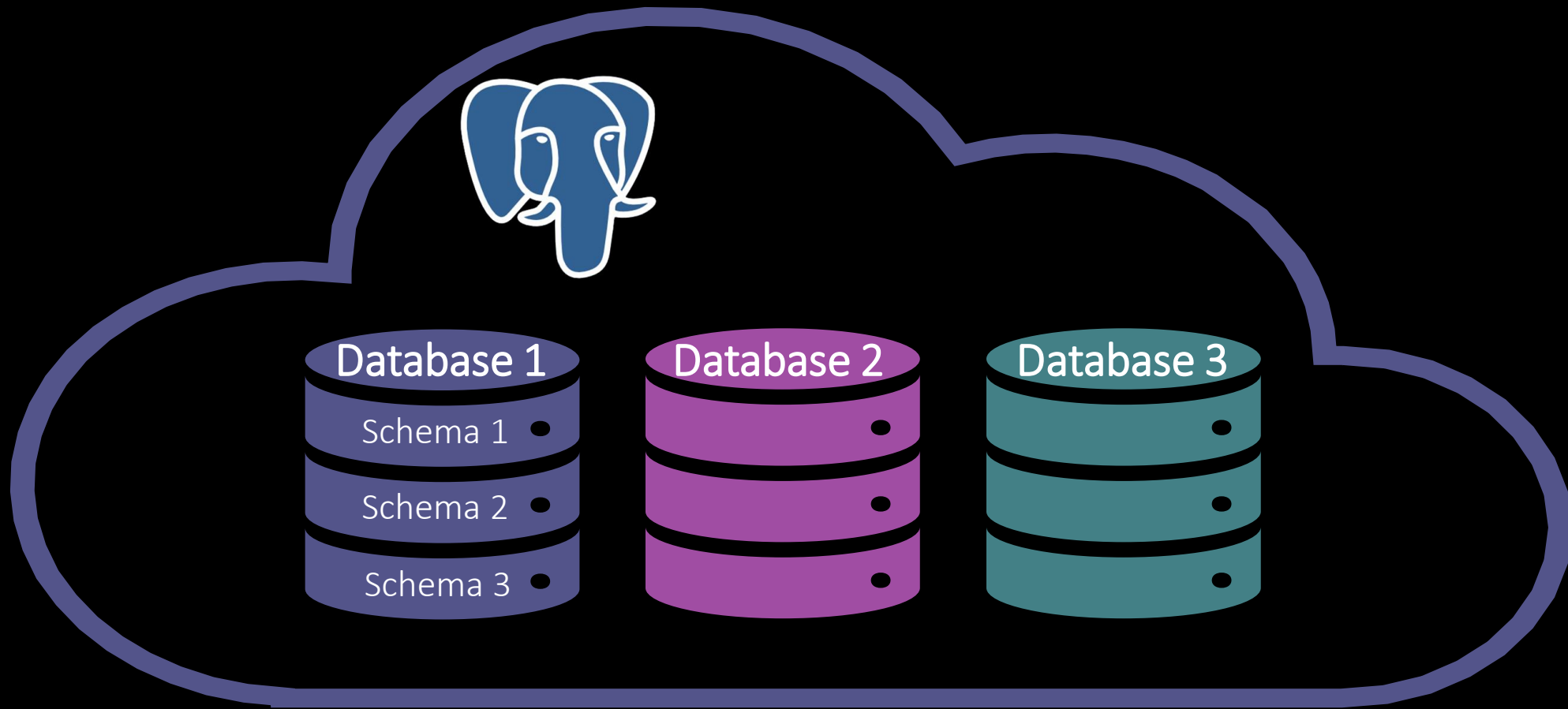


VACUUM

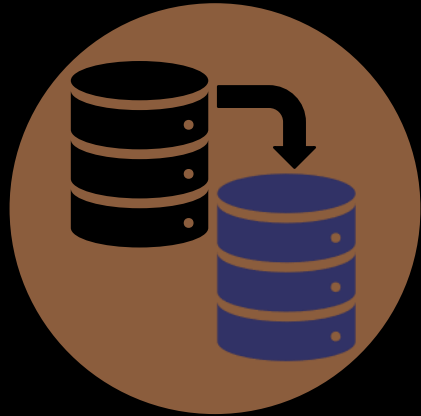
Exercise – Module 1-2.sql



Databases



Using Schema Names



NO CROSS-DATABASE
ACCESS



PUBLIC SCHEMA



EXPLICIT SCHEMA

Creating Users



CREATE USER

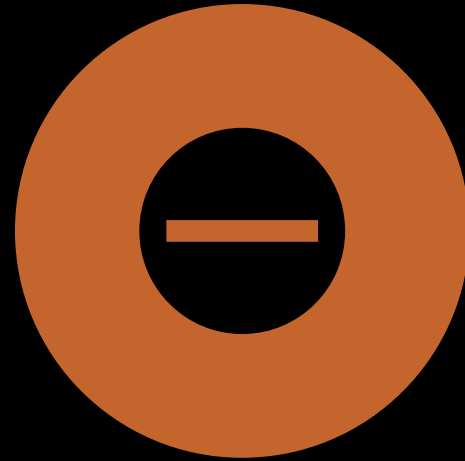


CREATE ROLE

Assigning Permissions



GRANT



REVOKE

Exercise – Module 1-3.sql

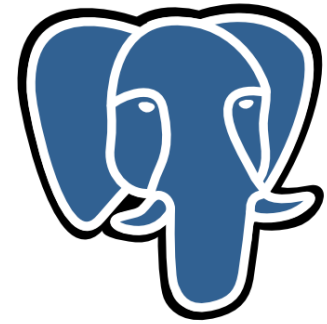


Break



Creating Objects

Support beams and skeleton coming
up!



PostgreSQL

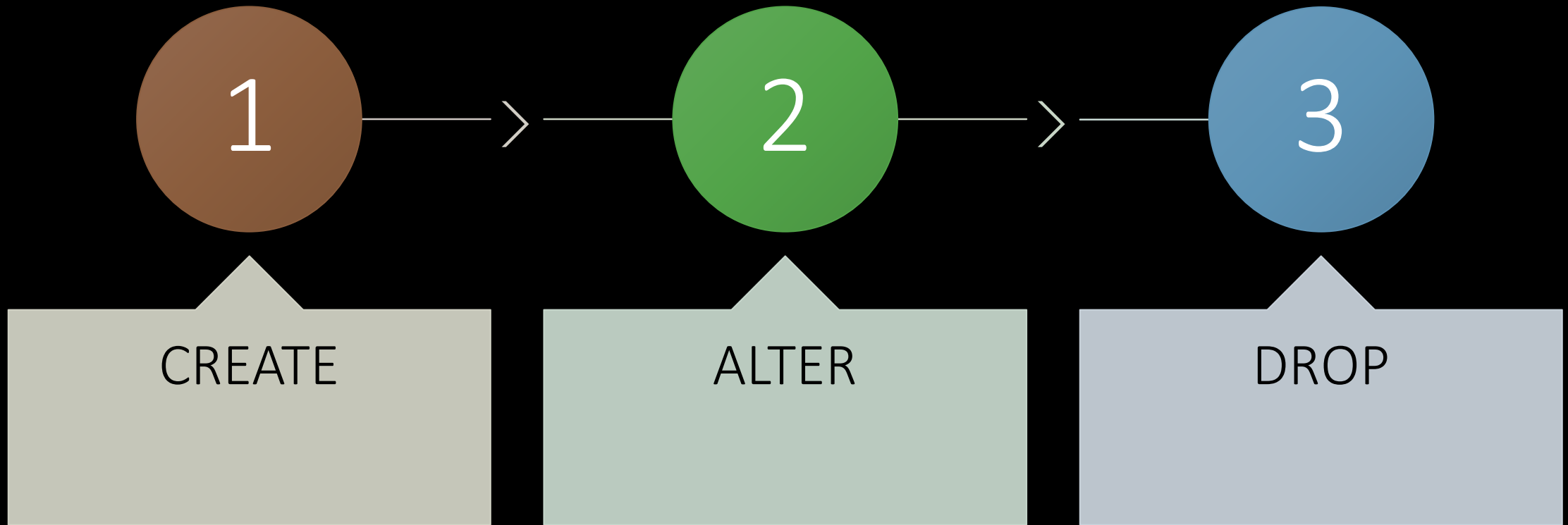
O'REILLY®

Agenda

CREATE, ALTER, DROP

Constraints

Data types



Creating Tables

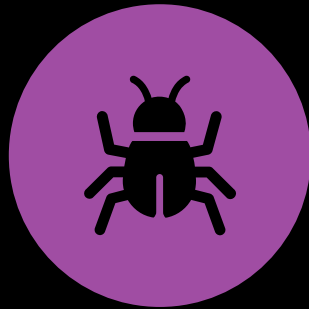
Exercise – Module 2-1.sql



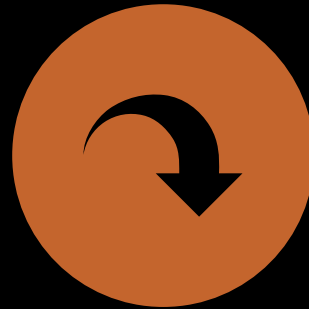
Constraints



PRIMARY AND
CANDIDATE KEYS



NULL



FOREIGN KEYS



CHECK

Exercise – Module 2-2.sql



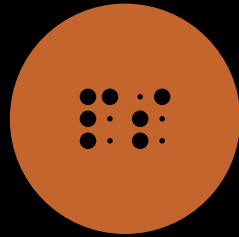
Data Types



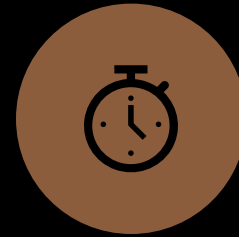
NUMERIC



STRING



BINARY



TEMPORAL



BOOLEAN

Exercise – Module 2-3.sql

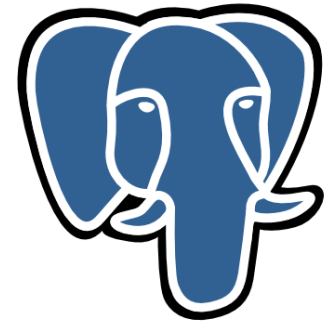


Break



Managing Data

Time to setup utilities, lights, floors
and walls



PostgreSQL

O'REILLY®

Agenda

INSERT, UPDATE, DELETE

SELECT query processing

Joins

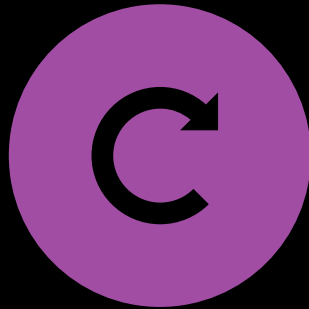
Filtering

Grouping

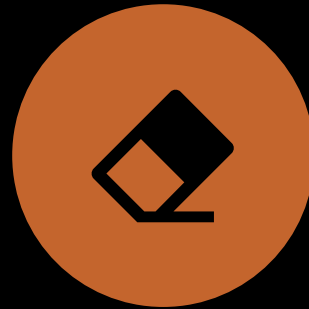
DML / DQL



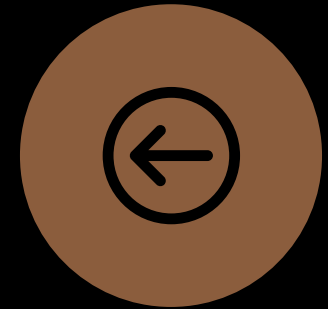
INSERT



UPDATE



DELETE



SELECT

Exercise – Module 3-1.sql



SELECT

5

FROM

1

WHERE

2

GROUP BY

3

HAVING

4

ORDER BY

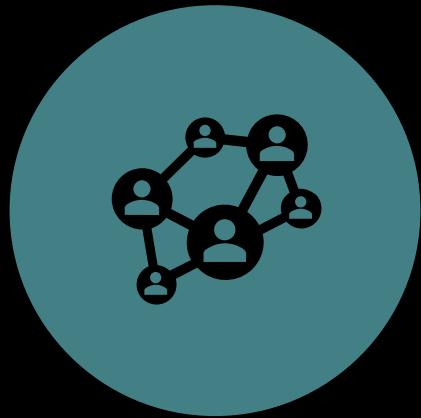
6

SELECT
processing

Exercise – Module 3-2.sql



JOIN fundamentals



CARTESIAN PRODUCT



MATCHING ROWS



BRING BACK RESERVED
ROWS

Exercise – Module 3-3.sql



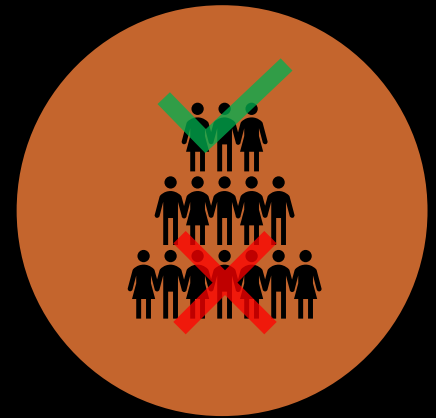
Filtering and Grouping



WHERE



GROUP BY



HAVING

Exercise – Module 3-4.sql



Break

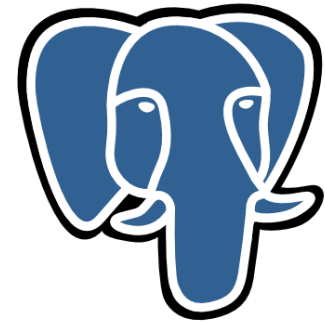


Questions



Supporting Objects

Carpeting, furniture, and we can move
in!



PostgreSQL

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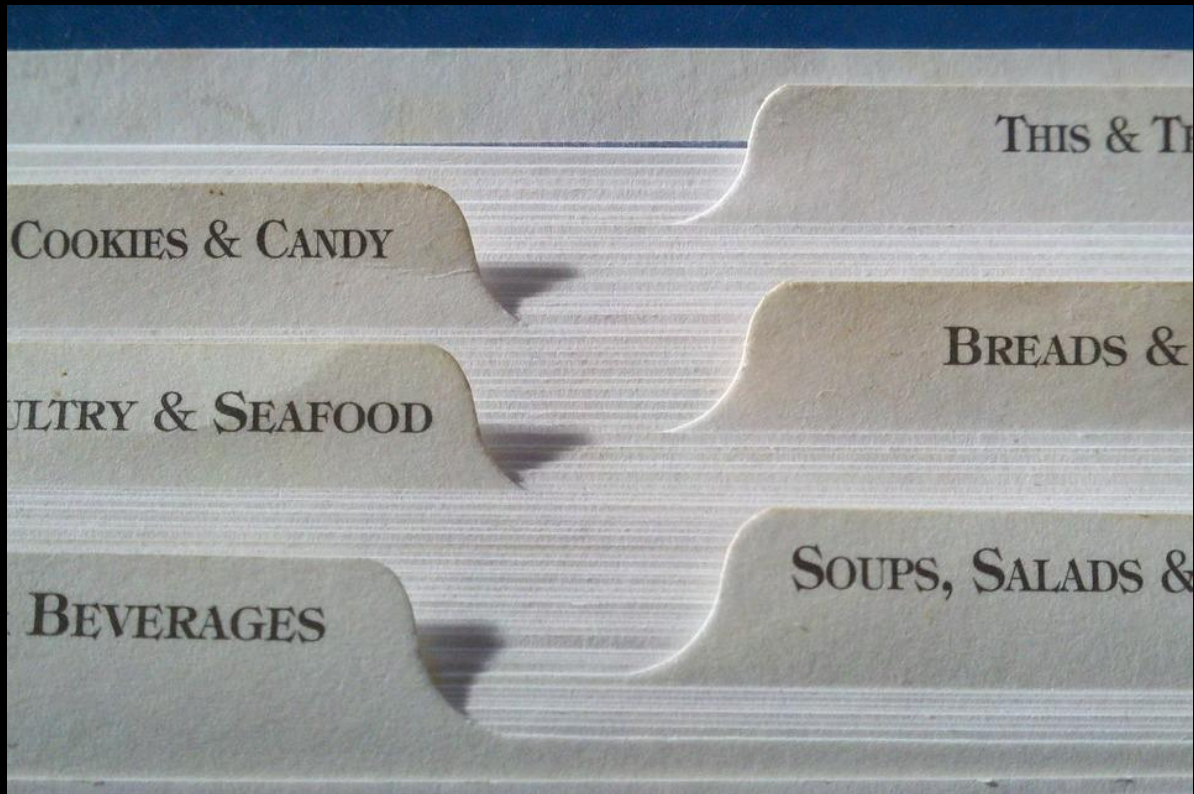
Agenda

Indexes

Operators and functions

Programming objects

Indexes

[illegible]

Index Types

Balanced Tree (B-Tree)

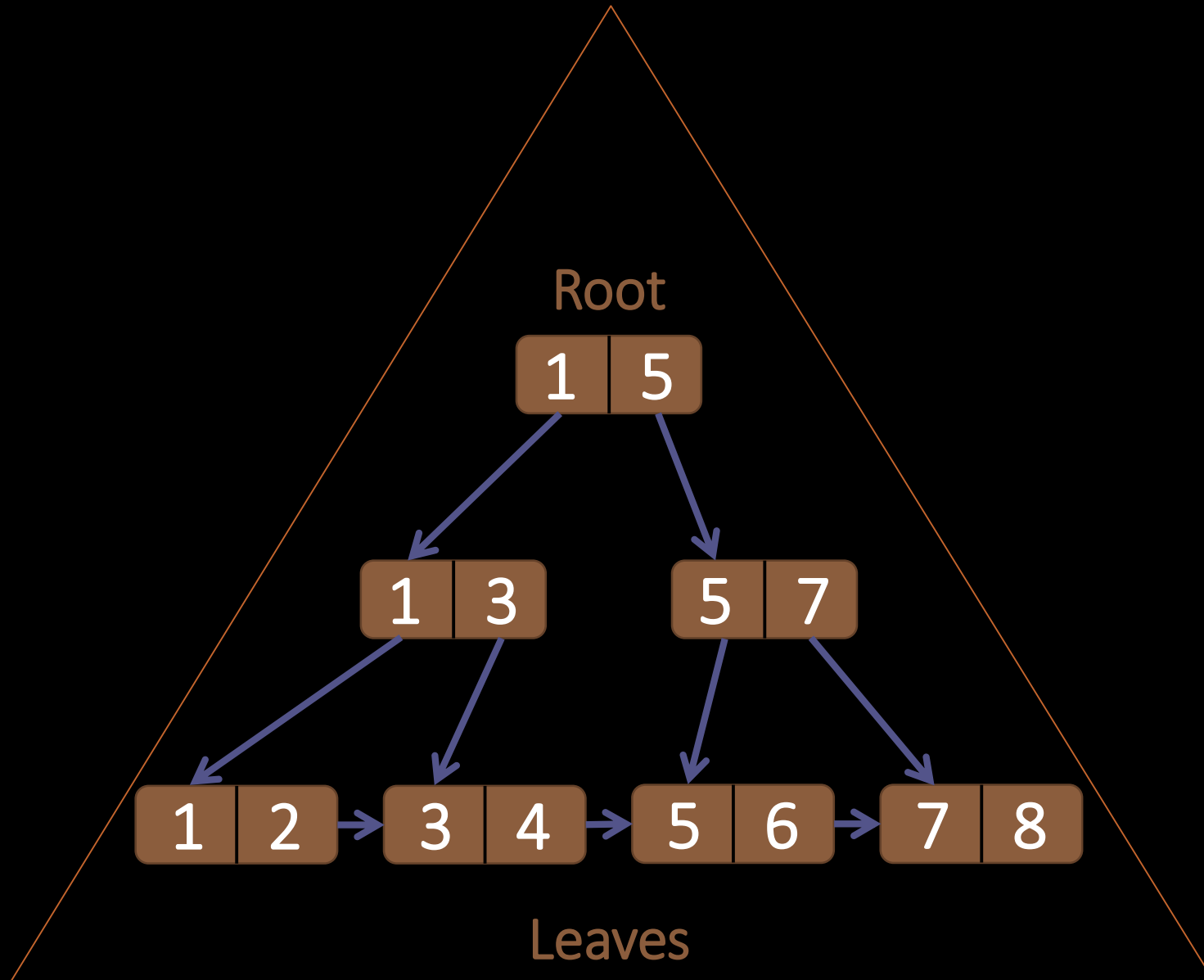
Hash

GiST / SP-GiST

GIN

BRIN

Balanced Trees



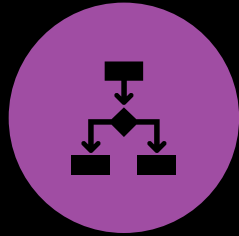
Exercise – Module 4-1.sql



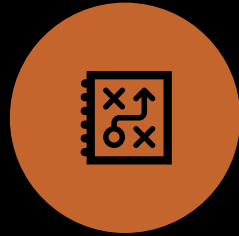
Operators and Functions



MATHEMATICAL
OPERATORS



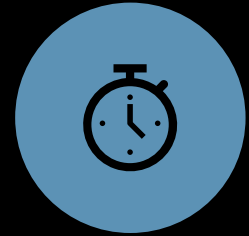
LOGICAL
OPERATORS



NULL HANDLING



STRING
FUNCTIONS



TEMPORAL
FUNCTIONS

Exercise – Module 4-2.sql



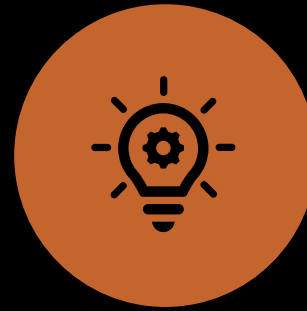
Programming Objects



VIEWS



STORED
PROCEDURES



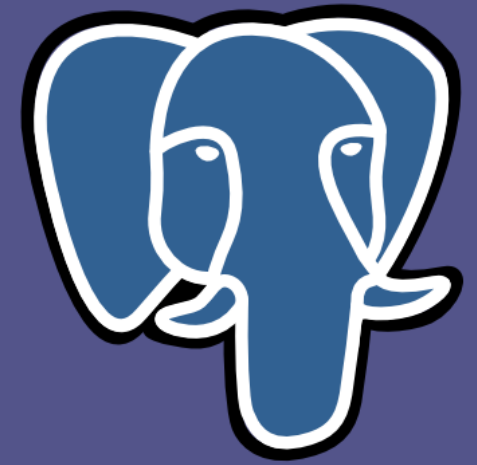
TRIGGERS



USER DEFINED
FUNCTIONS

Exercise – Module 4-3.sql





PostgreSQL

Conclusions

What's next?

Feedback



UNDERSTAND
WHAT IT IS



USE IT
EFFECTIVELY



GET YOUR
HANDS "DIRTY"



LEARN SOME SQL
FUNDAMENTALS

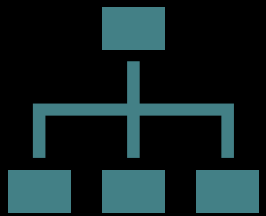


GET CURIOUS
AND MOTIVATED



HAVE FUN!

What Next?



MASTER THE
RELATIONAL
MODEL



ADDITIONAL
COURSES



BOOKS



PRODUCT
DOCUMENTATION



WIKIPEDIA
consider donating...

Get involved!



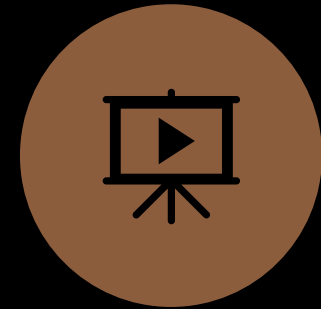
LOCAL USER GROUPS
AND MEETUPS



ONLINE
COMMUNITIES



TRADE CONFERENCES



BLOGS, TWITTER,
YOUTUBE

Questions





PostgreSQL

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Thank You!

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